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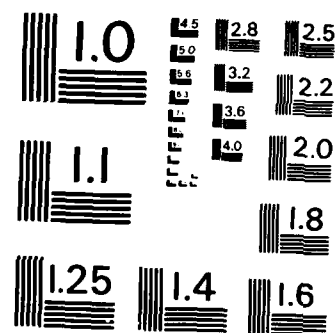
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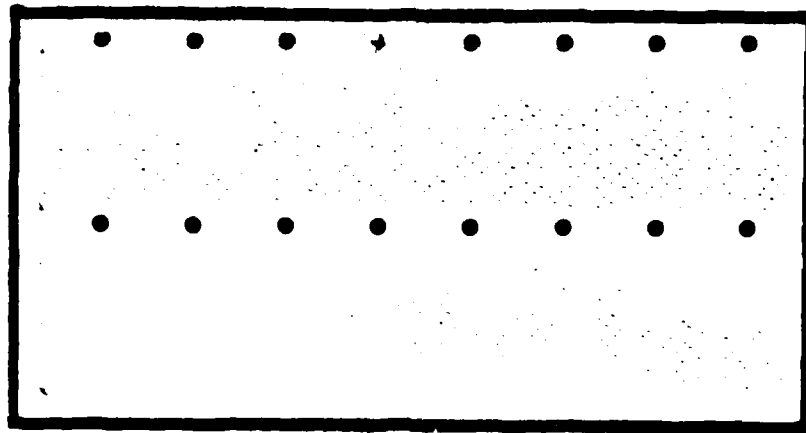
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AN ELECTRONIC INDEX OF ARTICLES
PERTAINING TO AIR FORCE TRANSPORTATION
IN THE POST-WORLD WAR II ERA, WITH
ABSTRACTS OF SELECTED ARTICLES

THESIS

F. RUSS ANIBLE
CAPTAIN, USAF

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AN ELECTRONIC INDEX OF ARTICLES PERTAINING TO
AIR FORCE TRANSPORTATION IN THE POST-WORLD WAR II
ERA, WITH ABSTRACTS OF SELECTED ARTICLES

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

F. Russ Anible, B.S.

Captain, USAF

September 1985

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Acknowledgements

Many people had a hand in helping an inveterate history fanatic transform an unorthodox idea into a useful product. Captain Karen Wilhelm, a fellow history buff, deserves credit for suggesting a historical thesis based on abstracts of selected sources. Major Kent "Fearless Leader" Gourdin and Dr. Terry Skelton provided invaluable advice and encouragement, and let me dare to believe I had stumbled onto something of significance. I must also thank Mr. Jerome Peppers, Emeritus Professor of Management of the School of Systems and Logistics, for taking a personal interest in the project and encouraging me, and Marina Griner, Post Librarian at Fort Benjamin Harrison, for aiding my research.

I musn't forget Lori Metzger and Lisa Neff and their courteous staff, who kept my coffee cup full through long hours of research at my favorite corner table at the Huber Heights G.D. Ritzy's Grill. No thanks will ever be adequate for my wife, Jan Marie, and our four children, who must have often believed they had been widowed/orphaned by this project, but nevertheless backed me all the way. I am indebted to my parents, from whom I learned the tenacity to see great undertakings through to the end.

Finally, this work is dedicated to my father, who imparted to me a love for all venerable old things with wheels.

Floyd Russell Anible

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Abstract

This project designed and compiled an electronic index system to catalog articles in military, transportation, and aviation periodicals published during the period 1947 through 1957 and pertaining to transportation and its relationship to the U.S. Air Force. The system consists of a Master Index giving the title, author, publication, and date of over 1,000 articles, with abstracts of selected articles. Separate alphabetical Author, Title, and Subject Indexes are cross-referenced to the Master Index through a simple numerical code system. The indexes are stored on 5-1/4 inch flexible magnetic diskettes which are placed in pockets fastened into the front and back covers of the copy of the thesis kept in the Library of the School of Systems and Logistics, Air Force Institute of Technology. An additional set of diskettes are in special protective sheaths included with the copy retained by the Transportation Option Manager, also at the School of Systems and Logistics. The disks can be accessed through a Burroughs B20 computer operating system.

The articles indexed are those dealing with transportation modes and vehicles owned, operated, used, contracted, and leased by the Air Force, and policies and procedures that governed their use. Also included are accounts per-

taining to modes and vehicles owned and operated by other military services but rendering direct support to Air Force operations. In addition, sources pertaining to the interface of Air Force airlift operations and operations of other services are included.

A manuscript accompanying the disks explains the general issues behind the project, bibliographical background and precedents, topical and chronological parameters, and objectives. The methods used to compile the information and construct the indexes are described in detail. Some conclusions regarding historical implications are given, along with recommendations for future research.

AN ELECTRONIC INDEX OF ARTICLES PERTAINING TO
AIR FORCE TRANSPORTATION IN THE POST-WORLD WAR II
ERA, WITH ABSTRACTS OF SELECTED ARTICLES

I. Introduction

General Issue

The United States Air Force owns, operates, manages, maintains, and contracts many kinds of transportation vehicles and services. Transportation comprises an indispensable component of the logistics system necessary to sustain the operational -- flying and fighting -- mission of the Air Force. Many of these transportation services (motor vehicle fleets, rail spurs, commercial freight and household goods services, etc.), are for logistical support of the Air Force itself. However, one mode, airlift, is operated not only for internal support but also for support of all the branches of the Department of Defense. The Air Force is thus both an enormous consumer and provider of transportation services.

The Air Force must consider state-of-the-art technology, effective management methods, and efficient use of funds and energy when it makes decisions and plans regarding its use and operation of transportation services. But a consideration of the policies, procedures, methods, and experiments used and conducted by past decision-makers is also relevant.

At various times in our service's history, new transportation systems, methods, and concepts may have been rejected or overlooked for political, financial, or other reasons. An idea may have simply been "before its time." An originator may have lacked the resources, authority, or connections to successfully promote the implementation of his proposal. In planning the systems of the future, it would be worthwhile to resurrect and reconsider some of these concepts.

On the other hand, transportation methods that were attempted, but subsequently failed, should not be forgotten. An awareness of those concepts that did not work will help decision-makers to avoid making similar mistakes. In the words of American poet and philosopher George Santayana, "Those who cannot remember the past are condemned to repeat it."

A study of the practices and policies of the past should therefore be a part of every Air Force transportation decision-maker's education. This historical perspective can be integrated into academic coursework and can also be the topic of articles, reports, and literature reviews.

Specific Problem

There is no known comprehensive database system for military transportation historical works published prior to 1958 despite the fact there are many such works available in various libraries maintained by agencies of the Department

of Defense. The absence of such a system hinders the design of course outlines and the publication of literature reviews, studies, and articles from which valuable lessons of the past could be drawn. Academics, professional military educators, and researchers who seek to enhance the education of transportation managers by producing materials with a historical view, must undertake extremely time-consuming library searches to find the background information they require. Because automated data processing is a relatively recent development, most of the necessary source material will still be books, magazines, newspapers, and microforms. Thus, rapid retrieval and scanning is impossible. Conventional card catalogs and periodical indexes will provide many potential sources, but each must be manually located and then screened for relevance. A more efficient reference system, permitting topical discrimination by the researcher, is needed to encourage further historical research. Such a system would permit the researcher to reject false leads and focus on those sources that are relevant to a particular project and within its scope.

Background

Bibliographies. In the absence of a dedicated database designed specifically for historical researchers, published bibliographies are the next best resource available. However, an excellent database for research projects concerned with periods from 1958 to the present does exist in the form

of the Annual Department of Defense Bibliography of Logistics Studies and Related Documents, published by the Defense Logistics Studies Information Exchange (DLSIE) at Fort Lee, Virginia. For those seeking to explore the history of Air Force transportation preceding 1958, a number of bibliographies dealing with the broad subjects of military logistics and Air Force history at large are available. Examples include the bibliographies supporting Henry E. Eccles' Logistics in the National Defense, published in 1959, Bernard J. Termena's Logistics: An Illustrated History of AFLC and its Antecedents 1929-1981, and Robert Frank Futrell's "The U.S. Army Air Corps and the United States Air Force, 1909-1973," which appeared in the 1975 edition of A Guide to the Sources of United States Military History. Captains Charles Carpenter and Stanley Collins assembled an extensive topical bibliography during research on their Air Force Logistics: A Historical Perspective (1940 to 1983). It is divided into some 30 sub-topics, one of which is dedicated to transportation and another to airlift. Captain Karen Wilhelm also produced a valuable bibliography to support her work titled A Course in Air Force Logistics History Since 1940. There are certainly others, as well as countless journal articles that have not found their way into published bibliographies.

Initial Conclusion. A large body of published information on the history of Air Force transportation does exist

and is available through various libraries maintained by agencies of the military services, especially in those institutions designated as repositories of military history, such as the Albert F. Simpson Historical Research Center at Maxwell Air Force Base, Alabama. However, gleaning this information and narrowing it to a specific topic of interest entails extensive library searches. This process may discourage further historical studies, and make it difficult to focus on and track the historical development of specific transportation concepts. However, a dedicated database, including alphabetical author, title, and subject indexes, would encourage and facilitate such research, with accompanying benefits to the continuing education of transportation managers. Adding concise abstracts of selected sources to this index would further aid this research by permitting effective narrowing and concentrating of searches upon relevant sources. The collection of abstracts in this project borrowed ideas from the format employed by John T. Mentzer and Allan D. Schuster in their article entitled "Computer Modeling in Logistics: Existing Models and Future Outlook" (8). Their approach included a matrix of categories, indexes of authors, and short synopses. This thesis project was also inspired in part by the previously mentioned annual bibliographies published by the U.S. Army Logistics Management Center from 1958 to 1962, and by DLSIE from 1963 to the present.

Precedent. Sufficient precedent exists for specialized bibliographies, indexes, or databases such as the one in this project. The U.S. Army's Center for Military History has bibliographies on such subjects as small arms, coast artillery, and development of tanks. The U.S. Army Command and General Staff College Library Division offers bibliographies on many subjects, some as specialized as river crossings and night operations (7:4-5). The U.S. Air Force's Albert F. Simpson Historical Research Center has published bibliographies on manned balloons and airships, and on the history of women in the armed forces (5:106). This project's database and accompanying abstracts are intended to help serve the future needs of historical researchers in the Air Force Institute of Technology (AFIT) and the academic/military community at large.

Scope of the Research

Topical. The project included a search for published factual accounts and descriptions, as well as assessments, proposals, and opinions. It was confined to transportation modes and vehicles owned, operated, used, contracted, and leased by the Air Force, and policies and procedures that governed their use. Also included were accounts pertaining to modes and vehicles owned and operated by other military services but rendering direct support to Air Force operations. In addition, sources pertaining to the interface of Air Force airlift operations and operations of other services were included.

Chronological. The time period covered is referred to as the "post-war era," which for purposes of this project encompasses 1947 through 1957. These years take in the period from the establishment of the Air Force as a separate service to the beginning of the cataloging and abstracting of defense logistics topics by the U.S. Army Logistics Management Center.

Bibliographical. Source documents initially considered included books, theses, dissertations, journals, trade papers, and other periodicals commonly available at military libraries, or readily available through interlibrary loan from the older and/or larger libraries or libraries specializing in historical materials. In the early stages of research, it became evident that the cataloging of periodicals alone would yield a formidable database. Therefore, the project was confined to military, transportation, and aviation periodicals. Primary periodical sources included Air Force Magazine, Air Force Times, Airman, Air Transportation, Air University Quarterly Review, American Aviation, Army Information Digest, Army Navy Air Force Journal, Army Navy Air Force Register, Aviation Age, Interavia, Military Review, National Defense Transportation Journal, and Pegasus. On the subject of using periodicals in historical research, Futrell has written:

Because of limited access to official sources, one of the principal sources for publishable air history has been unofficial histories and periodical literature. In addition to standard military periodicals (196,

281) the principal Air Force journal -- even though published by the unofficial Air Force Association -- is Air Force Magazine (5). The Airman (7) is the official monthly magazine of the USAF, and the Air University Review (6) is published to stimulate professional thought (6:404).

(Parenthetical numbers are references to Futrell's bibliography.)

The primary libraries searched were those of the School of Systems and Logistics and School of Engineering at AFIT. Early research indicated a significant number of the older Army and joint-service journals which contained many potentially valuable articles were not available at Wright-Patterson Air Force Base. Previous experience during a tour of duty at Fort Benjamin Harrison, Indiana, indicated the presence of a good collection of such publications at that location. The Post Library and library of the Defense Information School, both at Fort Benjamin Harrison, proved to be invaluable secondary sources for this project.

Research Objectives

There was a wealth of historical information pertinent to this project, carrying many implications for present and future transportation management. As this material could have been handled and interpreted in a variety of ways, it was necessary to define firm objectives to guide the project. Five objectives were as follows:

1. To find as many sources of published material on the history of Air Force transportation, during the years 1947 through 1957, as possible in the available time.

2. To design and produce a system to catalog these sources.
3. To produce author, title, and subject indexes of these sources.
4. To read, and write abstracts of, as many selected sources as possible in the available time.
5. To publish the indexes and collection of abstracts in a format that would permit:
 - a. Ease of expansion by future researchers.
 - b. Ease of access and use by future historical researchers.

Conclusion

A determination was made early that the end product of this project should provide opportunities for future AFIT students to fulfill thesis requirements by expanding the resulting database. It will further serve as an incentive and tool for researchers looking for lessons that can be learned from the past successes and failures of transportation practices and policies in the early years of the separate Air Force.

II. Synthesis

General Method

As this project sought to streamline the process that historical researchers must follow to find relevant source materials, it was itself driven by that process; namely, extensive exploratory library search. Following the collection of as many pertinent sources as possible in the available time, the method then shifted to that of alphabetical index construction. Finally, after selection of a nucleus of sources, the number of which was based on time constraints, generally accepted literary abstracting methods were applied to those sources.

Source Compilation

Prospect Listing. The collection of prospects began with an exhaustive search of the Air University Periodical Index (predecessor to the Air University Library Index to Military Periodicals), spanning the years 1949 through 1957. A search for every conceivable indexed topic pertaining to the Air Force and its relationships to transportation was undertaken. Each page in the index containing such a topic was photocopied and these pages formed a preliminary prospect listing.

Screening. Prospects were screened for topical and chronological relevance to the scope of the project. Where the title and date of publication did not clearly establish

such relevance, further screening was accomplished by scanning/reading. This process was essentially subjective, but the following general criteria were employed:

1. Did the source pertain to transportation events, concepts, systems, and vehicles occurring, employed, or developed during the period 1947 through 1957?

2. Did the source pertain to transportation events, concepts, systems, and vehicles observed by, used by, provided by, developed by, affecting, supporting, or interfacing with the Air Force?

Selection for Abstracting. Concurrent with the screening process, titles which appeared to have particular value for future research were earmarked for reading and abstracting. This was also to be a subjective process, but the following criteria served as a guide:

1. Did the source pertain to the origin or development of concepts or technology that are still in use?

2. Did the source pertain to the proposal of concepts or technology that are still being considered for future implementation or production?

3. Did the source pertain to concepts that were tested and proven unsuccessful?

4. Did the source pertain to concepts that were tested, proven successful, but for various reasons were not implemented?

5. Did the source pertain to concepts that for various reasons were never tested, but were believed would have proven successful?

6. Did the source pertain to concepts that were tested, proven successful, implemented for a time, but subsequently discontinued?

7. Did the source pertain to concepts that were objects of controversy in the military, scientific, business, or political communities?

Earmarking. As the screening and selection for abstracting proceeded, the listing was manually coded to indicate one or more actions to be taken in the processing of each potential source. The actions included "index" (enter into the index system), "screen" (locate, read or scan, and determine relevance to the project), "reject" (discard for lack of relevance to the project), and/or "abstract" (write an abstract of the indicated source).

Locating. The periodical holdings listings of the AFIT libraries and the Air Force Wright Aeronautic Laboratories library were consulted to determine which periodicals, and volumes of periodicals, were available on Wright-Patterson Air Force Base. All other periodicals cataloged in the Air University index and having potential contributions to the project index were to be searched out at the libraries of Fort Benjamin Harrison.

Two trips were made to Fort Benjamin Harrison. First, the periodical holdings listings of the post's libraries were examined to determine which periodicals not available at Wright-Patterson were at the Army post. Between the two military installations, nearly all pertinent periodicals were available in hard copy or microform for the period covered by the project.

Research at Fort Benjamin Harrison consisted of scanning/reading those sources accessible at that location which had been earmarked for screening in the preliminary list. The U.S. Army's index to the Army Information Digest, 1945 to 1965, was particularly helpful, especially for some sources in the 1947 to 1949 time frame and for some Army-Air Force interface sources that had escaped indexing in the Air University index. In addition, on-site drafting of abstracts of brief articles was conducted, as well as photocopying of longer articles selected for reading and abstracting later.

Database Construction

With much of the prospect screening and a small portion of the abstract drafting completed, the actual construction of an electronic retrieval database could commence. The "Executive WRITEone" program of the Burroughs B20 Operating System in the School of Systems and Logistics was selected for its accessibility, ease of operation, and flexibility and versatility of word-processing capabilities. Flexible magnetic diskettes were used as the storage medium.

By this stage, many pages of hand-drafted listings and hand-annotated photocopies of selected Air University index pages had been amassed, and transcription into electronic media was the logical next step. The formats for this input were carefully considered. Author, title, and subject indexes were conceived as straightforward alphabetical listings. To avoid the repetition of author, article title, periodical title, volume, pages, and date information for each entry in each of the three indexes, a decision was made to link entries to a master index by means of a simple numerical code.

The Master Index. The master index was patterned after periodical indexes currently in use. As each selected source was entered in the master index, it was assigned a four-digit code, beginning with 0001 and conceivably expandable to 9999. Following the number, an entry emulating the style of the Air University index was made. If the source was one for which an abstract had been written, the text of the abstract was entered immediately after the basic entry. (See Figure 1 for an example. Note that in Figures 1-4 the underlined entry may be cross-referenced in all four indexes.)

The master index is contained on a 5-1/4 inch flexible magnetic diskette, labeled "Transportation History Master Index." The index is accessible on the Burroughs B20 system through the following path: Volume: TranshistI; Directory:

- 0097 The XC-99, first global freighter. il AUQR 4,
no.2:90-92 Fall '50
- 0098 Air and Army reply to Navy arguments. Army Navy J
87, no.8:193 022 '49
- 0099 Strengthening the defense team. L. Johnson. diags
pors Army Info Dig 4, no.10:3-14 O '49
- 0100 Airlines and air power. R. W. Ireland. Nat
Defense Transp J 6, no.2:18-19 Mr-Apr '50
- 0101 Mobilization of civil air transportation. Brig Gen
R. W. Ireland. por Army Navy J 89, no.34:1041 Ap
26 '52

General Ireland gave historical background and justification for the historic agreement that led to the formation of the Civil Reserve Air Fleet (CRAF). This agreement had been reached just five months previous by the Secretaries of Defense and Commerce. He indicated that a greater availability of airlift would have doubtless shortened World War II and was even more critical in the setting of the early 1950's, citing speed of response as being one of the most decisive factors in any future war.

The mobilization plan was aiming to prepare some 331 long-range civilian aircraft, including such models as the DC-6A, DC-6B, Constellation, and Boeing Stratocruiser. These would be equipped with navigation, identification, communication, and survival items. Most of the equipment would be stored but ready for quick installation. Extensive modifications, such as those that might have prepared the aircraft for conversion to heavy cargo carriers, were not being planned at the time. Apparently strategic planners intended to rely on the civil fleet for passenger, and perhaps light cargo, airlift.

The fleet would be divided into a first line reserve, for continuous use during an emergency period, and a second line reserve, for use only during brief surge periods. The government would contract with airlines for their services as complete systems, including airframes, crews, management, and support personnel.

As had been voiced by others at the time, sufficient manpower to support expanded civil air operations posed a problem. Discussions concerning a combined military-civilian reserve force of individuals having air transport-related skills were continuing.

Figure 1. Sample of Master Index

Numeric; File: Mastdex. Once accessed, the "Search" feature of "Executive WRITEone" can be invoked to locate any desired source using any of several pointers: numerical code, title, key word(s) in title, author, periodical name, year of publication, etc. A numerical code desire list can be obtained from any of the other three indexes.

The master was designed for maximum flexibility and ease of expansion. As each new source is discovered, it can be assigned a new code number and added to the end of the index, regardless of its type, subject, or date of publication. There is no need to make insertions in the body of the index or realign the coding system to accomodate new additions.

The Author Index. As each entry was added to the master index, a corresponding entry was added to the author index, if the author's name was known. This index is a simple alphabetical listing of surnames. Following each surname is the author's first name and middle initial, and military rank as applicable. Following this information is a four-digit number or numbers pertaining to all articles by that author and contained in the master index. (See Figure 2 for an example.)

The author index is on a second diskette, labeled "Transportation History Author, Title, and Subject Indexes." It is reached by the following path: Volume: TranshistII; Directory: Alpha; File: Authdex. Again, the "Search" feature can be used to call up any desired author's name.

Herring, C.W., Lt Col 0221
 Hesketh, Leslie 1008
 Higgins, G.J., Gen 0014
 Higgins, J.W., Col 0729
 Hoffman, R.J., Lt Col 0191
 Hogan, E.F. 0271
 Hospelhorn, C.W., Maj 0010, 0289, 0483, 0772
 Hotz, R. 0144
 Hungerford, C. 0605
 Hunter, F.S. 0038, 0370
 Ingalls, D.J. 0199
 Innes, H. 0240
Ireland, R.W., Brig Gen 0100, 0101
 Jacobs, Harry A. 0248, 0698
 Jenkins, D.L., Lt Col 0645
 Johnson, Earl D. 0567
 Johnson, L. 0099
 Johnson, L.H., Jr., Lt Col 0291
 Johnson, Vernon R., Col 0691
 Johnston, C.D. 0607
 Jones, F.R., Maj 0668
 Jordon, H.A., Col 0265
 Key, W.G. 0116
 King, H.C. 0206

Figure 2. Sample of Author Index

The Title Index. As each entry was made in the master index, a corresponding entry was also added to the title index. This is also an alphabetical list, and following each title is the four-digit code referring back to the master index. (See Figure 3 for an example.) This is on the same diskette with the author and subject indexes, and its path is as follows: Volume: TranshistII; Directory: Alpha; File: Titledex. The "Search" device can be used to summon desired whole titles or a key word(s) in a title.

The Subject Index. The alphabetical subject index incorporates numerous topics and cross-references. Again, with each additional entry to the master, an entry (or entries) was made to a subject index. Where the source pertained to a subject area not already in this index, a new subject heading(s) was made and the code number entered after it. Where the subject was already indexed, the code of the new source was simply added to the list of numbers following the subject. These lists of numbers are, in effect, individual topical desire lists that can be jotted down and used to search the master index. (See Figure 4 for an example.) The subject index itself can be scanned for topics of interest by using the "Scroll" feature of the Burroughs system, or the "Search" function can again be called into play to display desired subjects. This index is also on the diskette labeled "Transportation History Author, Title, and Subject Indexes" and can be reached by this path: Volume: TranshistII; Directory: Alpha; File: Subdex.

Military Transportation 0208
 M.T.S. 0168
 MTS Policies 0169
 Military Transporter in the Far East, The 0715
 Military Transports 0419, 0420
 Milk, Not Coals From Newcastle, Was Cargo of Famed 'Tin Cow'
 0875
 "Miracle" of Combat Cargo, The 0266
 Mission of MATS, The 0546
 Mission of Mirth 0547
 Mobility in Readiness 0620
 Mobility Makes Strength 0567
 Mobility Unlimited 0196
Mobilization of Civil Air Transportation 0101
 Mobilize Air Transport 0197
 Modern Air Force Logistics Concept, The 0642
 Modern Air Logistics 0494
 Movement Control in the Combat Zone 0760
 Moving a Jet Bomber Wing 0568
 National Defense and Bulk Transportation 0676
 NEDA (National Emergency Defense Airlift) 0846
 National System of Interstate Highways, The 0595
 Nationwide Air Force Airlift Speeds Deliveries (Mercury
 Service) 0267
 Navy Compliments TAC on Antarctic Air Drop 0773

Figure 3. Sample of Title Index

Bus Transportation 0737
 Cargomaster - See Airplane Type - C-133
 CARIB-EX 0807
 CCT - See Combat Control Teams
Civil Reserve Air Fleet - History 0019, 0020, 0082, 0083,
 0096, 0100, 0101, 0102, 0103, 0436, 0550, 0609, 0610,
 0749
 Cold Spot, Exercise 0693
 Combat Control Teams 0249, 0802, 0809
 Commando - See Airplane Type - C-46
 CONEX - See Containerization
 Connie - See Airplane Type - C-69 and C-121
 Constellation - See Airplane Type - C-69 and C-121
 Containerization 0001, 0063, 0064, 0065, 0066, 0085, 0365,
 0583, 0584, 0585, 0586, 0685, 0699, 0715, 0726
 CRAF - History - See Civil Reserve Air Fleet - History
 Dakota - See Airplane Type - C-47
 Deepfreeze, Operation 0785
 Defense Transport Administration 0206
 DEW Line - See Distant Early Warning Line
 Dirigibles - See Airships
 Disaster Relief 0296, 0304, 0359, 0812, 0832, 0835
 Distant Early Warning Line 0170, 0688, 0711, 0717, 0720,
 0723, 0724, 0725, 0757, 0798, 0822, 0826, 0828, 0903,
 0904
 Flying Boxcar - See Airplane Type - C-82 and C-119
 Gliders 0216

Figure 4. Sample of Subject Index

Abstracting. The abstracts were usually two to three paragraphs in length, concise synopses of each earmarked source. Even for longer articles, the abstracts were limited wherever possible to one page. This approach was intended to facilitate quick perusal by researchers. Depending on the library location, physical form of the source, availability for loan, and available time, abstract drafting was accomplished on-site, or the sources were borrowed or copied for later reading. The abstracts were incorporated into the master index.

The Final Product

Although the indexes were confined to articles in military, transportation, and aviation periodicals, the system was deliberately designed to be suitable for the addition of other types of published works by future researchers. With the addition of the 1,000th source to the indexes, the writing of abstracts of selected articles was resumed. Approximately 15 per cent of the titles in the master were selected and received this treatment.

The indexes and abstracts were stored on flexible magnetic diskettes, which were placed in pockets fastened into the inside front and rear covers of the copy of the thesis kept in the Library of the School of Systems and Logistics at AFIT. An additional set of diskettes was placed in special protective sheaths included with the copy

retained by the Transportation Option Manager, also at the School of Systems and Logistics. The hard copy manuscript describes the project concepts, synthesis, and recommendations for future expansion. The diskettes are compatible with the Burroughs B20 operating system available within the AFIT data processing system. This operating system was selected based upon criteria of quick access capability and ease of expansion by future researchers.

III. Conclusions and Recommendations

Conclusions

Objective. The final product exceeded early expectations and met all the main goals of the project. It is a comprehensive database system for published articles pertaining to the history of Air Force transportation during the period 1947 through 1957. It is characterized by an on-line style of quick search and access capabilities, flexibility of use, and potential for ease of expansion in the future through the use of the Burroughs B20 word processing program. It should be of significant value to Air Force transportation history researchers.

Subjective. As the reading and abstracting processes progressed, a portrait of the young Air Force in the post-war era emerged. The newest of the services, it was seeking its own identity while building working relationships with the other established services. One of the areas of painful trial-and-error growth was in terms of airlift support to the Army. The lessons were costly, especially in the early days of the Korean War, but both services learned them well and improved their systems of coordination with each other. Despite this, the controversy over air-land battle doctrine continues to the present day, with the Army still insisting it needs more operational control in the field over airborne, airdrop, and tactical airlift resources.

Some things have changed a great deal, others remain much the same. Many issues raised in the 1950's continue unresolved, while some recur and find their solutions in cycles. Technology has probably made the most dramatic changes, evidenced by airlift aircraft of vastly greater range, speed, and payload, with much more sophisticated communications and navigations systems. Despite this, the 30-year-old C-130 Hercules is still every bit the workhorse and consistent performer it was when it was first introduced in the mid-1950's.

The three single managers for defense transportation -- the Army's Military Traffic Management Command (MTMC), the Navy's Military Sealift Command (MSC), and the Air Force's Military Airlift Command (MAC) -- each went through sweeping metamorphoses in the era covered by this project. In that time they worked and fought together and learned from each other, and in many ways are to this day still sorting out their roles and relationships. In contrast, one major Air Force transportation institution continued its unique operations virtually unchanged and successfully resisting all attempts at absorption by MTMC and MAC. This was the Air Force Logistics Command's daily commercial contract airlift system, LOGAIR. Some 31 years after the first contract was signed, it is still very much "business as usual" for LOG-AIR.

It was an ambivalent time, with Americans fearful of the Soviet threat but at the same time brimming with confidence in their nuclear supremacy. In this atmosphere, doctrines and controversies were born and continue to be espoused and argued to the present. The Air Force became the staunch advocate of modern logistics systems, using airlift to reduce inventories and shorten pipeline times, a philosophy they still promote. The disputes over whether we had enough airlift, how much was enough, and how much crossed the threshold into competition with civil air carriers, have continued through the years. A question still being asked 30 years later is whether we have a conventional force strong enough, and mobile enough, to suppress an overseas war without recourse to nuclear weapons. On a note of particular regret, the United States should have learned many airlift lessons in the early months of the Korean War, and could have profited from analysis of the French defeat at Dien Bien Phu in 1954 and the British and French experiences in the Suez Canal crisis of 1956. Despite this, shortfalls of strategic airlift continue to be one of the greatest weaknesses of our defense.

Some experiments of that era may seem bizarre in retrospect, such as the tank-tread landing gear tried on the C-123 Provider assault aircraft, or the monstrous "Snow-Train" -- a giant wheeled vehicle intended to travel over the frozen tundra of Alaska and Canada to support Distant

Early Warning (DEW) Line radar sites. But with the growing interest in containerization of cargo, is it possible to someday see a resurrection of the XC-120 "Pack-Plane" -- the aircraft with the detachable cargo-carrying fuselage?

The past holds a wealth of knowledge, with the perspective that comes from having known both success and failure. Such insight should enhance the problem-solving skills of our present and future Air Force transportation managers. It is hoped this project will provide one tool to assist in the preservation of that knowledge and the engendering of that perspective.

Future Research

Index Expansion. The indexes are designed to be readily expanded with no set-up or realignment necessary and with no loss of continuity. If future researchers desire, they may expand the system in terms of additional sources and abstracts without exceeding the established time boundaries (1947 through 1957). They may begin with a continuation of the search of articles in military, transportation, and aviation periodicals. This project was able to index most, but by no means all, such articles of the subject era, as time did not permit the screening of all potentially relevant titles in the initial listings. For those desiring to continue the project in that vein, the author of this manuscript will make available copies of the preliminary lists with those sources warranting further investigation ear-

marked. He can be contacted through the permanent address contained in the Vita, page 30.

This index can also be enlarged through the inclusion of other types of sources, such as books, articles in popular magazines, Air Force publications, etc. Some suggested sources and guides to sources are as follows:

1. Library card catalogs.
2. AFIT thesis index.
3. DLSIE-produced custom bibliography of known pre-1958 titles.
4. Readers' Guide to Periodical Literature (Search for articles on events and developments in Air Force transportation that attracted the coverage of the popular news magazines.)
5. U.S. Air Force Extension Course Institute and Professional Military Education instructional materials.
6. Any other indexes unique to particular library collections, but which catalog materials readily available through interlibrary loan.

The Albert F. Simpson Historical Research Center and the Air University Library, both at Maxwell Air Force Base, Alabama, are certain to have a wealth of sources on military transportation history. Another possibility is the Air Force Museum Research Library at Wright-Patterson Air Force Base.

Expansion into years preceding 1947 (pertaining to the Army Air Force, Air Corps, Air Service, etc.) or following 1957 is also possible. As long as the integrity of the three alphabetical indexes (author, title, and subject) is preserved, the master index can be expanded indefinitely. New sources can be added to the end of the index without concern for their type or their date of publication, as the alphabetical indexes and the computer's search capability will always provide clear avenues of access.

Parallel Projects. For those researchers whose professional interests lie in other areas of logistics, this system can form the pattern for like systems. Similar indexes could be constructed for supply, procurement, maintenance, and logistics at large, with historical and/or contemporary orientations.

Conclusion

The project diskettes contain a product intended to serve as a foundation. It is hoped that logistics researchers will expand, improve, and refine it. It is also hoped this will be a pattern for similar database construction efforts that will enhance the educational base of military logistics managers.

On its own merits, the final product should be a useful tool to logistics students and educators who seek to improve Air Force managers' future skills and knowledge by studying the lessons of the past.

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VITA

Captain Floyd Russell Anible was born in Bay City, Michigan, on 11 March 1950. He attended Michigan public schools, Gogebic Community College, and Grand Rapids Baptist Bible College before enlisting in the U.S. Air Force in 1971. He attained the rank of Staff Sergeant and performed the duties of jet engine mechanic, computer operator, and television producer before separating from active duty in 1975. He married the former Jan Marie Carlson of Muscatine, Iowa, in 1975. He attended St. Philip's College in Texas and Mankato State University in Minnesota, receiving a Bachelor of Science degree in Industrial Education from the latter in 1978. Following graduation he was commissioned in the U.S. Air Force through Officer Training School and assigned to Dyess AFB, Texas, as a Traffic Management Officer. He served as Vehicle Operations Officer and Vehicle Maintenance Officer for Eielson AFB, Alaska, until entering the School of Systems and Logistics, Air Force Institute of Technology, in 1984. The Anibles have four children: Jennie, 9; Sarah, 6; Katherine, 3; and John, 1.

Permanent Address: C/O Mr. and Mrs. Frank W. Anible
1715 South Hadley Street
Bessemer, Michigan 49911

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This project designed and compiled an electronic index system to catalog articles in military, transportation, and aviation periodicals published during the period 1947 through 1957 and pertaining to transportation and its relationship to the U.S. Air Force. The system consists of a Master Index giving the title, author, publication, and date of over 1,000 articles, with abstracts of selected articles. Separate alphabetical Author, Title, and Subject Indexes are cross-referenced to the Master Index through a simple numerical code system. The indexes are stored on 5-1/4 inch flexible magnetic diskettes which are placed in pockets fastened into the front and back covers of the copy of the thesis kept in the Library of the School of Systems and Logistics, Air Force Institute of Technology. An additional set of diskettes are in special protective sheaths included with the copy retained by the Transportation Option Manager, also at the School of Systems and Logistics. The disks can be accessed through a Burroughs B20 computer operating system.

The articles indexed are those dealing with transportation modes and vehicles owned, operated, used, contracted, and leased by the Air Force, and policies and procedures that governed their use. Also included are accounts pertaining to modes and vehicles owned and operated by other military services but rendering direct support to Air Force operations. In addition, sources pertaining to the interface of Air Force airlift operations and operations of other services are included.

A manuscript accompanying the disks explains the general issues behind the project, bibliographical background and precedents, topical and chronological parameters, and objectives. The methods used to compile the information and construct the indexes are described in detail. Some conclusions regarding historical implications are given, along with recommendations for future research.

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